

Claims

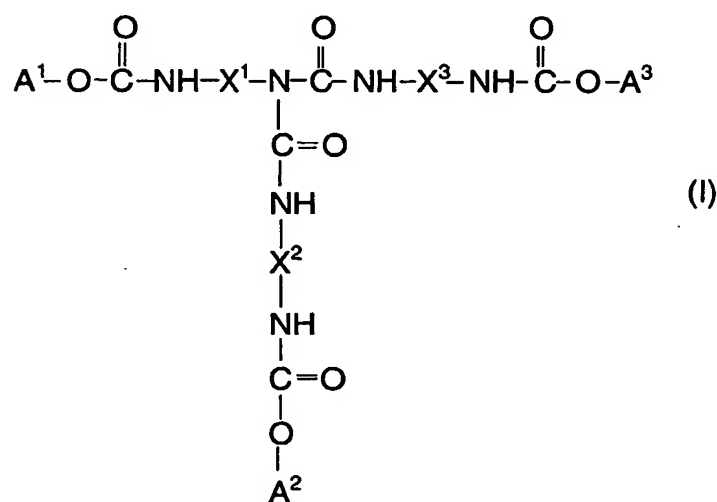
1. Radiation-sensitive element comprising

(a) an optionally pretreated substrate and

(b) a radiation-sensitive coating comprising

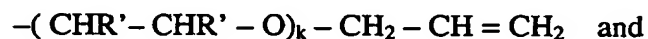
(i) at least one absorber selected from photoinitiators and sensitizers, which is capable of absorbing radiation of a wavelength in the range of 250 to 1,200 nm;

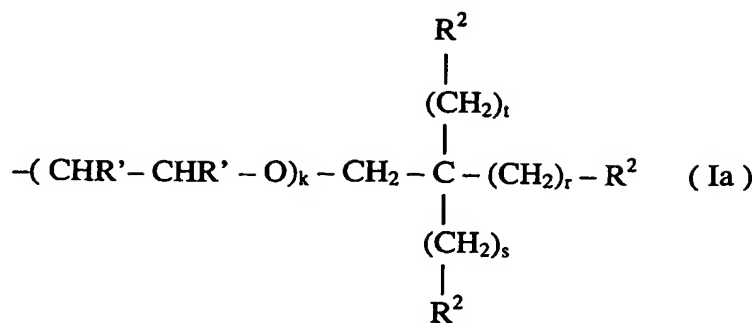
(ii) at least one oligomer A of formula (I)



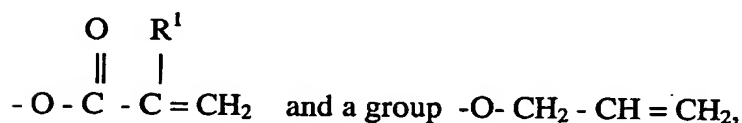
wherein X^1 , X^2 and X^3 are independently selected from $C_2 - C_{18}$ alkanediyl and $C_6 - C_{20}$ arylene,

A^1 , A^2 and A^3 are independently selected from





wherein k is an integer from 0 to 10, each R' is independently selected from a hydrogen atom and CH_3 , each R^2 is independently selected from a hydrogen atom, a group

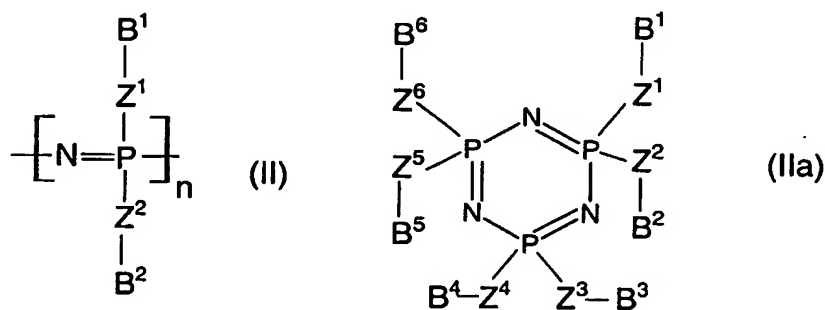


R^1 is a hydrogen atom or $\text{C}_1 - \text{C}_{12}$ alkyl and

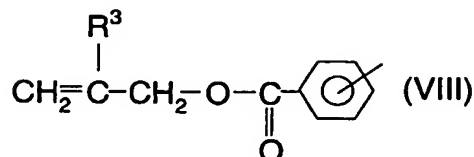
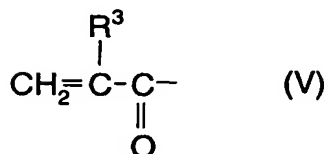
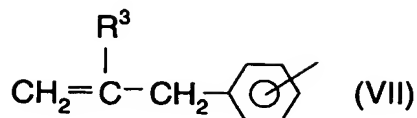
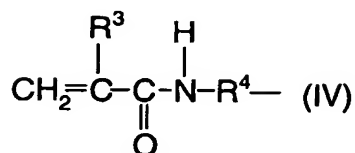
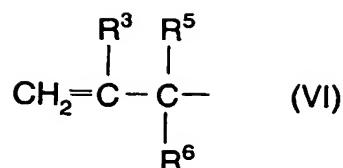
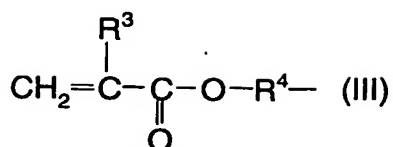
r, s and t independently of each other are 0 or 1,

with the proviso that in each group A^1, A^2 and A^3 at least one R^2 is not a hydrogen atom if A^1, A^2 and A^3 all represent a group of the formula (Ia), and

(iii) at least one oligomer B, which is a phosphazene of formula (II) or (IIa):

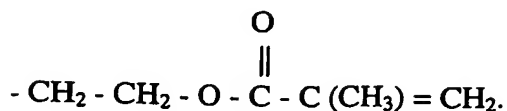
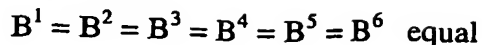


wherein $\text{Z}^1, \text{Z}^2, \text{Z}^3, \text{Z}^4, \text{Z}^5$ and Z^6 are independently selected from $-\text{O}-$ and $-\text{NR}-$, R is a hydrogen atom or $\text{C}_1 - \text{C}_{12}$ alkyl, n is greater than 3 and $\text{B}^1, \text{B}^2, \text{B}^3, \text{B}^4, \text{B}^5$ and B^6 are independently selected from

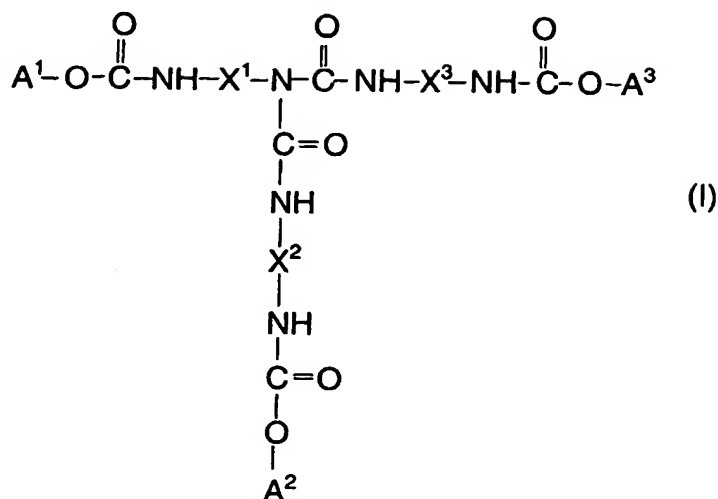


wherein R^3 is a hydrogen atom or $\text{C}_1 - \text{C}_{12}$ alkyl, R^4 is $\text{C}_2 - \text{C}_{12}$ alkanediyl and R^5 and R^6 are each independently selected from a hydrogen atom and $\text{C}_1 - \text{C}_{12}$ alkyl.

2. Radiation-sensitive element according to claim 1, wherein the radiation-sensitive coating comprises at least one further component selected from coinitiators, which form free radicals after the excitation of the initiator or sensitizer with radiation of a wavelength of 250 to 1,200 nm, binders, thermopolymerization inhibitors, dyes, plasticizers, chain transfer agents, leuco dyes, inorganic fillers and surfactants.
3. Radiation-sensitive element according to claim 1 or 2, wherein an oligomer A is used wherein in formula (I) $\text{X}^1 = \text{X}^2 = \text{X}^3$.
4. Radiation-sensitive element according to claim 3, wherein $\text{X}^1 = \text{X}^2 = \text{X}^3 =$ hexamethylene.
5. Radiation-sensitive element according to any of claims 1 to 4, wherein oligomer B is a phosphazene of formula (IIa).
6. Radiation-sensitive element according to any of claims 1 to 5, wherein oligomer A is the reaction product of hexamethylene diisocyanate biuret and at least one acrylate of a multi-valent alcohol comprising (a) hydroxyl group(s), and oligomer B is represented by formula (IIa) wherein

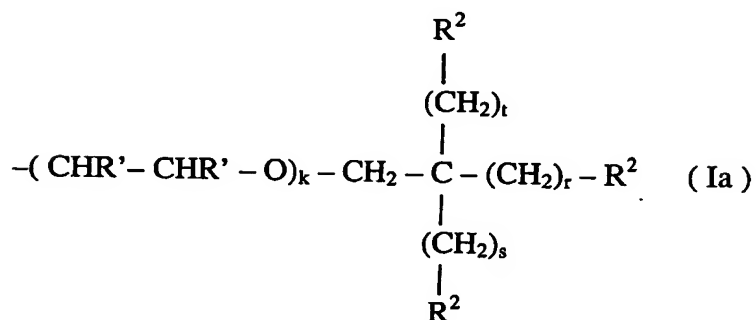
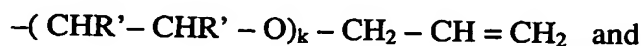


7. Radiation-sensitive element according to any of claims 1 to 6, wherein an oxygen-impermeable overcoat is provided on top of the radiation-sensitive coating.
8. Radiation-sensitive element according to any of claims 1 to 7, wherein the substrate is an aluminum foil or plate that has optionally been subjected to at least one pretreatment selected from roughening, anodizing and application of a hydrophilizing layer.
9. Process for the production of an imaged element comprising
 - (a) providing a radiation-sensitive element as defined in any of claims 1 to 8;
 - (b) image-wise irradiation of the element with radiation of a wavelength adjusted to the absorber contained in the radiation-sensitive coating of the element;
 - (c) optionally heating the image-wise irradiated element;
 - (d) removing the non-irradiated areas with an aqueous alkaline developer; and
 - (e) optionally heating the imaged element obtained in step (d) and/or subjecting it to overall exposure.
10. Radiation-sensitive composition comprising
 - (i) at least one absorber selected from photoinitiators and sensitizers, which is capable of absorbing radiation of a wavelength in the range of 250 to 1,200 nm;
 - (ii) at least one oligomer A of formula (I)

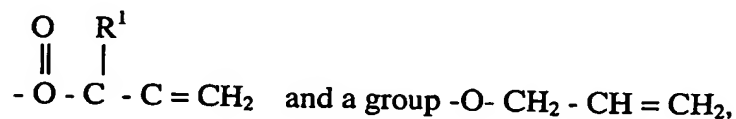


wherein X^1 , X^2 and X^3 are independently selected from $\text{C}_2 - \text{C}_{18}$ alkanediyl and $\text{C}_6 - \text{C}_{20}$ arylene,

A^1 , A^2 and A^3 are independently selected from



wherein k is an integer from 0 to 10, each R' is independently selected from a hydrogen atom and CH_3 , each R^2 is independently selected from a hydrogen atom, a group

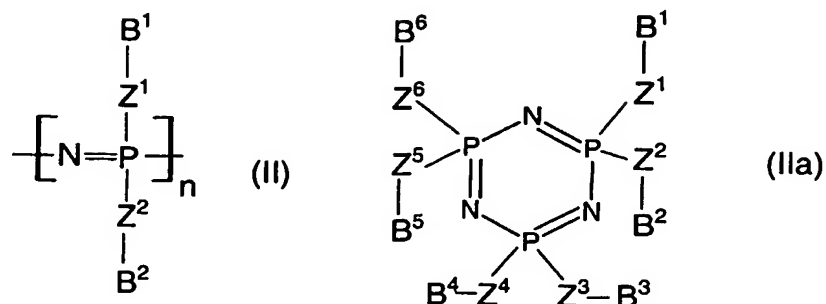


R^1 is a hydrogen atom or $\text{C}_1 - \text{C}_{12}$ alkyl and

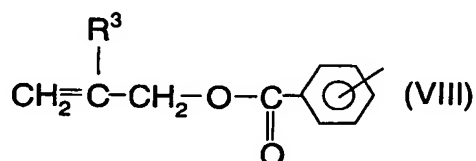
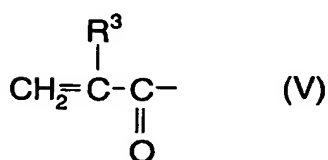
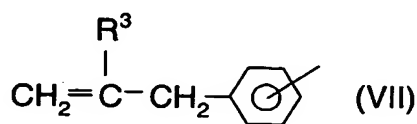
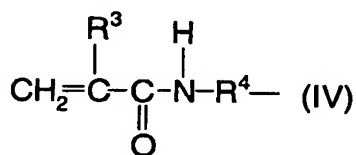
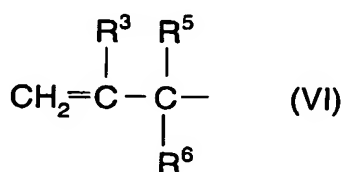
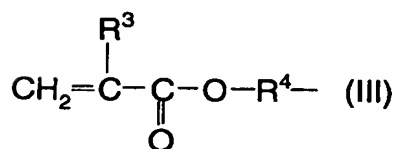
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with the proviso that in each group A^1 , A^2 and A^3 at least one R^2 is not a hydrogen atom if A^1 , A^2 and A^3 all represent a group of the formula (Ia), and

(iii) at least one oligomer B, which is a phosphazene of formula (II) or (IIa):



wherein Z^1 , Z^2 , Z^3 , Z^4 , Z^5 and Z^6 are independently selected from $-\text{O}-$ and $-\text{NR}-$, R is a hydrogen atom or $\text{C}_1 - \text{C}_{12}$ alkyl, n is greater than 3 and B^1 , B^2 , B^3 , B^4 , B^5 and B^6 are independently selected from



wherein R^3 is a hydrogen atom or $\text{C}_1 - \text{C}_{12}$ alkyl, R^4 is $\text{C}_1 - \text{C}_{12}$ alkanediyl and R^5 and R^6 are each independently selected from a hydrogen atom and $\text{C}_1 - \text{C}_{12}$ alkyl; and

(iv) a solvent or solvent mixture.

11. Radiation-sensitive composition according to claim 10, additionally comprising at least one further component selected from coinitiators, which form free radicals after the excitation of the photoinitiator or sensitizer with radiation of a wavelength of 250

to 1,200 nm, binders, thermopolymerization inhibitors, dyes, plasticizers, chain transfer agents, leuco dyes, inorganic fillers and surfactants.

12. Use of a radiation-sensitive composition as defined in claim 10 or 11 for the production of a radiation-sensitive element.
13. Production of a radiation-sensitive element as defined in any of claims 1 to 8 comprising:
 - (a) providing an optionally pretreated substrate;
 - (b) applying a radiation-sensitive composition as defined in claim 10 or 11;
 - (c) drying; and
 - (d) optionally applying an oxygen-impermeable overcoat and drying.